Making the Change - Crossing over from research science to science reporting.

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Introduction

In a very real sense the research scientist and the science reporter have similar jobs: to communicate science. But differences in the intent of the communications and the composition of the target audiences necessitate fundamentally different approaches and values.

What I intend here is to discuss the differences between effective communication values and practices for the research scientist and the science reporter. My aim is to raise awareness in the two camps of what the differences are and why they exist, in the hope that this will facilitate more effective communications between the two.

Background

The subjects I intend to cover here became apparent to me during my recent change from research scientist to science reporter. So perhaps a brief biography may be in order.

I completed my PhD on Australian fossil crocodilians at the University of New South Wales under Michael Archer. I have several papers in refereed journals, I have presented papers at numerous conferences around the world and generally experienced life as a research scientist.

My interests in communicating science developed in parallel with my research science career, starting with a series of publications in popular magazines. As time progressed, I presented several public lectures on palaeontological topics and have written three books for *National Geographic* and *Time/Life*. During 1993 to 1995 I toured primary schools across Australia with an in-school presentation on dinosaurs. My biggest commitment to science communication began early in 1997 when the ABC employed me as a Trainee Science Broadcaster. In this role, I learnt skills for presenting the sciences on radio, television and multimedia.

Setting

Comments made here are from personal observations and tend to be general in nature. So, while it should not be too difficult to find exceptions to various propositions, the basic generalizations appear valid (to me anyway!).

Further, because my experiences have been mostly in the electronic media, particularly radio, when I refer to "the media", I will be referring to the electronic media. While some of these observations are probably also valid for the print media, I feel unqualified to comment.

Approach

Generally it can be said that both the research scientist and the science reporter have a love (or at least a sincere interest) for science, but the differing nature of their work means that their attitudes and understanding of science will be different.

Research scientists usually have an extremely detailed knowledge of a relatively small area of science; they are specialists. Usually the researcher has been interested in a particular subject for a long time and has developed an attachment to it. They care for their subject area and think that others should understand and also care for it.

The science reporter on the other hand must be a generalist in regard to science. Each week means producing a different story. This leads to a greater breadth of knowledge about science but usually means a lack of depth to that understanding (in comparison to the scientist). This more gregarious approach to science results in less attachment to any particular subject but an overall appreciation of several areas.

Research scientists see their work as a small part of a greater whole. They understand the intellectual framework that places their work in context and the work of colleagues that compliments or conflicts with their findings. When reporting a story, the science reporter can assume that their target audience will know little if any of the intellectual context and the reporter will have extremely limited opportunities to provide that context. Because of this, the science reporter will be more inclined to report on scientific work as a "stand alone" story, often lacking the context that, to the scientist, makes the story relevant.

There are differences in perception of relevance of scientific work. The scientist accepts that their work is relevant and worthy because they understand it as part of a greater body of knowledge. The science reporter will assume that their audience will not automatically accept the worth and relevance of a scientist's work because the audience will most likely not know the details of context. Because of this, the science reporter generally needs to make a story relevant to the audience by direct consequence.

For example, my work on fossil crocodiles was worthy and relevant because it contributed to a greater body of knowledge about the evolution of Australia's ecosystems. However, to explain this concept in detail to a general audience would require an overly long article with extended explanations of related concepts that would take the focus away from the subject at hand: the fossil crocodiles. General articles on various aspects of my work tended to emphasize the nasty nature of animals with big fangy teeth or the possibility of a tree-climbing crocodile or the nature of land-dwelling crocodiles, all of which would be more likely to spark the interest of a general audience. There is always room for some context, but never enough to make the scientist happy!

Jargon and assumed knowledge of basic concepts are essential forms of shorthand for communication between members of the group that understand them. However, they

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act to exclude others from understanding and participating in the experience of that knowledge. It is surprising how quickly one forgets what concepts have been acquired during education and what a lack of that knowledge means for an overall appreciation of a subject. For example, between fellow palaeontologists, we all know what we mean by "the Cretaceous Period". This single term carries information about the age of a fossil, its likely contemporaneous organisms and environments, its potential significance in the history of life and the distribution of rock deposits of that age across the country and around the world. To those unfamiliar with this background information, this richness of meaning is completely lost. But once this knowledge is acquired, it can be difficult to recognise what a lack of that knowledge means.

Generally, because of the culture of science and the nature of tenure for most scientists, they will rarely want to say something controversial, enter into a debate or become argumentative on an issue in public. I've seen, and been involved in plenty of vigorous debates about points of science in tea rooms, at conventions and over a beer but this spirit of challenge is rarely translated to the media. There are a number of possible reasons for this, but I think that there is a general feeling of science not wanting to air it's internal conflicts in public. Handing controversies over to the media is made doubly difficult by the generally held view that the media get details wrong or misrepresent particular cases. For the media, this is particularly disappointing. The best radio and television programs contain debate, controversy and argument. So the reporter will often be looking for controversy and debate while the scientist will be trying to avoid them.

Presentation and Audiences

The Research Scientist

In this consideration of the communications of a research scientist, its should be remembered that all comments are generalisations. It does not take too much effort to provide examples of research scientists who are also effective popular communicators; examples that do undermine the following generalisations. However, as generalisations and personal observations, I feel that they do centre on typical cases which are instructive for the purposes of this essay.

The primary communication for the research scientist is the refereed journal article or spoken presentations in seminars and conferences. Both spoken and written communications from research scientists tend to be copiously illustrated with graphs and figures. The style of writing is usually in the third person and the tone is objective, often giving the communication a sterile quality devoid of human identity. The subject can be and usually is abstract with no immediate and obvious personal connections to members of the audience.

The quantity of communications produced by the research scientist varies enormously, but there is no imperative to produce communications on a regular basis (while the current academic environment does favour high publication rates, there is no set quota for how much work needs to be conducted in a particular period). The scientist has the option of producing lengthy, detailed and complicated arguments that the audience can study at length or question at the end of a seminar. Typically a conference presentation will be 10 to 20 minutes, and an institutional seminar or lecture can go for an hour. Written communications can be lengthy monographs or even books.

In the case of a journal article and, to a lesser extent, a seminar presentation, the author structures the article according to a pre-set formula. Generally it starts with an introduction to establish a problem and provide relevant background information before proceeding through an account of the methods and results, and finally a discussion of the implications for the study. In this sense, the communication is climactic - the most interesting bits are at the end.

Research papers and seminars attract a particular audience with distinct characteristics. The audience will be "captive"; members of the audience will be reading or listening not so much for entertainment but for their professional needs. Most of the audience will be active in the same discipline or a related subject area. As such, the audience will be attentive to the communicator. The audience will also tend to possess a high degree of specialist knowledge including assumed knowledge of basic concepts and understanding or relevant jargon.

The audience for a presentation by a scientist will be more concerned with the content of the work rather than who conducted it. Science is supposed to be objective and personalities are peripheral to the conduct of good science.

Given the favourable disposition of a research scientist's audience, a common barrier to effective communications is the lack of communications skills. Scientists rarely have any formal training in communication techniques and can fail to pitch their presentations at the correct level (particularly when communicating outside of their colleagues as an audience). Consider the occasions you have attended an institutional seminar where the presenter has talked on a related discipline but pitched it with exclusive jargon and excessive assumed knowledge such that you really did not understand what they were talking about. Or consider the occasions you have tried reading an article from another area of science. If you are still not sure what I mean, try reading the next issue of *Nature* from cover to cover and see how much you really understand!

The Science Reporter

In almost every detail, the values and parameters of good communication for the science reporter are the antithesis of those given above for good communication by the research scientist. In the electronic media, the predominant presentation is spoken but will include visual elements in the case of television and multimedia. So, in the case of radio, and to some extent on television, the most effective communication tool of the scientist (graphs and figures) are useless.

The science reporter will usually have a quota of air-time to fill each week. Come what may, a certain amount of time has to be filled regardless of what material is available. Currently, there is an oversupply of good stories available, which means that some stories will not make it to air. To make room for other stories, some stories will have to be shorter presentations than can do them complete justice.

There is no set formula or structure for a general science communication but there are certain rules. For an item to be effective, it must start with a "hook"; a provocative opening statement and theme that captures the interest of the listener. This is usually part of the conclusion of a study and, in this sense, it is the reverse of a scientists' communication. Throughout the presentation, effort is directed at maintaining the attention of the audience through such devises as using a variety of voices, including musical or sound elements and introducing provocative quotes.

There is also more than one way to deal with a story. Different programs have different treatments and styles. So, where one science reporter is aiming to produce a short, snappy item, another may well want to conduct an extended, in-depth interview.

The audience for popular science communications will be particularly heterogeneous but there are several common characteristics. The audience will be voluntary and attention will be given for entertainment rather than professional reasons. Because of this there must be reasons created for tuning in and they must be encouraged to keep listening. As mentioned above, this can be achieved in a number of ways but the underlying principle is that a connection has to be made with the audience. The listener is unlikely to be attentive to the whole communication so it must be structured in an accessible format. Most of the audience is unlikely to have knowledge of basic concepts relevant to the communication so attention has to be drawn to identifying and explaining what would otherwise be assumed knowledge and jargon.

In order to engage the audience, the science reporter needs to find an angle that makes the item relevant to the listener and tells a story. Further, the story needs to be personal because the audience is more likely to relate to a personal story than an objective presentation of facts. The story needs to be warm and subjective, human and emotional if people are going to be encouraged to listen. The length of a science article in the media is quite short. Most radio pieces are between 5 and 8 minutes, and as little as one and a half to 2 minutes for a science piece in a television news bulletin.

The audience for a general science presentation will be as interested in who is doing a particular piece of science as they will be about what they have done. So the science reporter will always be looking for the personal aspects or the personalities featuring in a story. The scientist may be adept at presenting their research, but they have usually given little thought or effort to projecting their personality. Further, the scientist rarely appreciates why the reporter wants to focus on them; to the scientist, their personality is irrelevant to the story they wish to tell the reporter. All too often this can result in a rather flimsy depiction of a research scientist.

So, to make a good science story for a popular audience, the science reporter is looking for a strong story line with an angle that is relevant to the listener; that has warmth, humanity and emotion in it; and that can be packaged together into a relatively short communication. These are just the qualities that the research scientists are trained to delete from technical articles and may not give enough attention to when composing seminars and lectures.

In showing this essay to colleagues for comment, and in written reports from two referees, the previous paragraph attracted the most harsh criticisms from scientists. Sure, there is a sense of story in technical science communications, but how may of us received any training in story telling as part of a BSc or higher degree? How many seminars are constructed primarily to engauge the audience rather than to provide information? When do scientists deliberately write themselves or their colleagues into a science narrative solely for the purpose of giving the audience points or reference through which they might experience the events portrayed? As scientists we do not receive training in storytelling, the most fundemental skill of a science reporter.

Bringing them together: What can be learned from observing the differences between scientists and science reporters?

The justifications for why science needs to be communicated to general audiences could (and hopefully will) be the subject of a future essay. It's unfairly dismissive to think that the popular communication of science is driven by science reporters trying to justify their existence. Ultimately, the reasons for the scientist to participate in popular science communication lays in personal philosophy and responsibilities. Personally, I feel as a research scientist, I am part of a society that largely pays for me to conduct my research. I feel a sense of civil obligation to explain what I do. I also feel that there's little point in doing something as exciting as piecing together the history of Australia's crocodiles unless I tell as many people about it as want to listen. But, for the moment, let's take it as written that we need to communicate science to the public.

The popular communication of science is the job of the science reporter in collaboration with the scientist. In order to do this, there must be a healthy rapport and understanding between the two.

The most common barriers between scientists and science reporters are a lack of appreciation on the part of the scientist of the requirements for an effective general science presentation and an essentially shallow appreciation of the subject matter on behalf of the science reporter.

When faced with a science reporter wishing to cover a particular story, the scientist ought to recognise what the science reporter is doing and what they require. They are not trying to present a lengthy, in-depth seminar on the subject but they are looking for a relatively short story that covers the salient points. The reporter will be as interested in the personalities behind the work as they will be concerned about the content, so the scientist may give some thought to presenting some human aspects of their study. When talking to a science reporter, is the scientist using excessive jargon or assumed knowledge? If so, why not think of simple ways to express ideas contained in jargon or explaining basic concepts or perhaps even avoid introducing them in the first place. The scientist could give some prior thought to an effective way of placing their work in context the quickest possible way and of identifying aspects of a subject that a popular audience will find novel, interesting and exciting. It also helps if the scientist has thought about presenting their subject as a story rather than a seminar.

The science reporter needs to understand that the scientist considers their studies as the subject and sole content of any popular account and that usually the communication skills of the scientist will be developed for a different form of communication. The science reporter needs to be conversant with the basic concepts of a particular subject and will usually try to get the scientist to explain these when they occur. This requires some extensive research on the subject by the reporter prior to any interviews; there is no substitute for adequate sound preparation.

A proposal for scientists

There is no better teacher than experience. If a scientist is interested in the effective communication of their subject to a general audience, they can do no better than to have a go themselves. Many scientists do write popular articles about their research but very few attempt to produce radio or television articles. While television productions are rather involved, most radio productions are no more complicated or difficult to produce than a magazine article. Further, organizations such as the ABC Science Unit are only too happy to assist individuals who want to tell their own story. The result may not be of broadcast quality (although one would hope so) but the exercise will be beneficial in itself. Have you ever tried to package your life's research into a five-minute spoken article that is understandable to a 14 year old and can hold the attention of 100,000 people? It's not as easy as you might think!

Any scientist who might like to try their hand at popular science communication is welcome to contact me to discuss the issue. They will also find many other media people who would be interested in such a collaboration. So please come forward!

Miscellaneous tips for scientists:

- Don't be afraid to be controversial. Controversy makes good media. If you want to get a point across, pitch it as a debate or controversy.
- The reporter is not an idiot. They may not understand the concepts you are discussing but they are intelligent. If they ask you the some question twice, it is probably not because they're thick, but because you may not have answered it effectively the first time.
- Be human and emotional. The central irony of scientists describing their work is that they love what they are doing but they are trained to communicate it in an objective, unemotional way. Your don't need to cry to show you're sincere, but try injecting a little of the love you have for your subject into your popular communications.
- Trust embargos. It is better to organise the public announcement of work *prior* to formal publication and hold it with press embargos than to try and start after the formal publication is released. Reputable reporters respect embargos or they rapidly lose access to scientists.
- Off the record is off the record. Often a reporter is trying to establish basic facts about a story only to be thwarted by people who are unwilling to talk for one reason or another. An off the record comment will be respected and will assist the reporter in their work as well as help smooth relations between the reporter and the scientist. But a note of caution: be careful with off the record comments if you are not familiar with the reporter. Generally a dedicated science reporter is not going to abuse an off the record comment because chances are they will need to return to that scientist in the future and can't afford the breach of trust. General reporters who are not solely reliant on scientist for stories may not be so careful with off the record comments.
- Don't be frightened to come forward with a story. Develop media contacts that you trust and stay in contact. The media may not run with every story that you feed them but the best way for the media to learn of your story is if you tell them.

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TOSS GASCOIGNE: There has been some criticism today of newspaper photographs featuring the heads of scientists and their scientific objects. I wondered, in light of what you were saying, what comments you would have on those newspaper photographs and the suitability of the subjects they portray.

PAUL WILLIS: Again, I seem to be picking on you, Michelle, I'm not, trust me, I'm a scientist. When I saw that picture of Michelle holding up the green and golden bell frog and she's complaining that her face is in the picture, I thought, okay, take yourself one step back from that. Instead of you holding up a frog, imagine it's an art critic holding up an idol that they have just got from China, or imagine that it's a cook with a vegetable. If it's a newspaper article you don't want to see a shot just of the vegetable, do you? You don't want to see a shot just of the icon. You want to know about the person who has brought it to Australia. So a picture of them is quite a viable part of that story.

I think that what you're getting at comes from the culture in science that we repress personalities. There's nothing worse in science than knowing that down the corridor there's that bighead who's always on the television. You have all got bigheads down the corridor, haven't you? But the thing is, if you wonder why they're getting the press coverage, think about the personality that they're putting forward. They're not frightened to put forward a personality. It's the personality rather than what they're saying that's getting picked up by the press. So when they report on the personality they're able to slip in their story with it.

So the photograph of a face in a newspaper article is part of presenting science to a popular audience.

BOB BEALE: Can I make a comment on that too? We hear that complaint too because the picture is there to tell the story that the words tell, and in your case you are as much part of the story as the frog is. You're the person who is researching. The frog can't talk for itself. I mean, we can see you in relation to your frog or whatever it was. It helps.

PAUL WILLIS: Yes, exactly. "And in defence we have Michelle."

MICHELLE CHRISTY: Can I just say firstly I wasn't complaining about it. No, no, no. There were two things. The first is that I specifically asked, "Please can I not have the typical *Sydney Morning Herald* close-up," so close that you can't see the person's face, you can only count the number of wrinkles. In fact, a friend of mine actually said to me, she was reading the paper and she said to her husband, "Look, there's someone who's studying the frog and she's got the same name as Michelle." So all I was saying is firstly that I asked not to and secondly that it's not very flattering.

KATHY DAVIS: I feel I should make an answer to that one too because I objected to being photographed like this with a flying-fox nose to nose. I feel it always tends to degrade the weight of whatever I'm trying to say when eventually it looks like I'm into the cuddly, furry brigade and I'm rubbing noses with my bat. It really does look like that in a lot of photos.

I have had people say, "Were you kissing it?" because with my animal, to see it eye to eye, which is what all the photographers want, I have to hold it above my head to look at it eye to eye. You get some really weird photographs. It is difficult with an animal that is effectively upside down to get into a position where both me and it can get in the photo together. I think there should be a little more latitude when people come to take photographs.

PAUL WILLIS: Sure, and there could be more creativity in the way that the shots are framed, but Bob's point still remains that you are part of that story and the audience that are reading that story are going to be just as interested in you as they are in the message about the flying-foxes.

JENNI METCALFE: I would like to tell you a story about a scientist that I worked with in Western Australia who was working on the worms that they were finding in Cockburn Sound from the ballast of ships. The way in which they got his photograph was to get him to put his head in the aquarium where the worms were and to shoot up through the aquarium at his face. That story then made the front page of the *West Australian* and got across the message that he really wanted. I think that quite often with press photographers you're asked to do compromising things that you normally wouldn't do, but if it helps put your story on page 1 or 3 instead of page 26 - - -

PAUL WILLIS: Without a photograph.

JENNI METCALFE: - - - without a photograph, it can really make a difference.

PAUL WILLIS: Yes.

COL YOUNG: All reporters, whether they be current affairs or scientific reporters, ask one stupid question in my book and it's like Stuart Diver has been brought out from Thredbo and the fellow says, "What was going through your mind when you heard that fellow's voice?" Why do they ask that question?

PAUL WILLIS: Although I object to it as well, the reason why they ask that question is that that's the question that's going through most of the Australian public's mind. That's what they want to know. I know it's embarrassing and it's belittling and all that sort of stuff, and the thought of actually being there asking that question seems like an invasion of privacy and all that, but if you were to go out and poll Australians that would be the most likely question to be top of the list.

MARTIN DENNY: I feel, listening to a lot of this, that we're really being conned. Us scientists are being conned. We're being flattered. We're being coerced. We have got people coming up here telling us what to do, to put up all of these little gimmicks and novelties and things like that we have got to do all the time.

I wonder sometimes what our intentions are as scientists, whether we do have to have all this publicity or not, whether we're being driven for some altruistic reason or whether it's just from plain ego. On top of it I feel sometimes, particularly in the context of much of the publicity these days, that this publicity or the press or the media is an insatiable organism that is really thriving. It is dragging things out of us, all possible things.

To give one example of a radio show, the old Earthworm that came on the ABC which was supposed to be an in-depth type program, I was asked to be interviewed for that with Marilyn Fox who was then with the Botanic Gardens, and it was on to do with past vegetation in New South Wales. Marilyn Fox could get up there from the botanic point of view and give a lot of very important - I thought extremely important - scientific information about it. I could quote from explorers' journals, Sturt, what he saw and things like that. We were interviewed for say half an hour or so. When it went on the radio Marilyn Fox wasn't on it at all. I was on it because I gave something that was funny and spectacular.

This is supposed to be a reasonably serious show, the Earthworm. It's supposed to be the one that's put up there like that. But I wonder really what's it all about. I think in a way we're being driven by the media, not the other way round.

PAUL WILLIS: Whether or not science should have a popular face and do that through the media, I suppose is a matter of personal or individual philosophy. Personally I feel that when I was a research scientist my research was funded by the Australian public and they had a right to know what I was doing and to get any useful message across it had to go through a popular rather than a scientific realm.

MARTIN DENNY: I think these are excuses. It's just like we have heard earlier today. People had a scientist who was publicly funded and therefore I had the right to do it. You don't have a right at all. You could do it if you want, if you personally feel like it. But I think a lot of it is actually being driven by ego more than this idea of giving this information out. There are many people who can popularise science without having to exploit the scientists themselves.

We have always had Popular Mechanics, we have had popular science, we have had National Geographic - all these people who are professional, have expertise, who can popularise a lot of the scientific literature without having to drag in people's personalities. There's no need for it. There's no need for it at all unless that person himself feels he needs to be driven by it for other reasons and I think sometimes that's mainly ego.

PAUL WILLIS: I would think that if you were to look at the circulation against the population of the country for things such as Popular Mechanics, even National Geographic, Australian Geographic, although they are effective for communicating science at that level, their reach is a small fraction of radio, television and the newspapers. To an extent though, popularising science solely through Australian Geographic, through National Geographic and those sorts of journals would more or less be preaching to the converted, that portion of the population that already understands and knows to some extent the value of science.

What we're about is trying to reach the rest of the population which probably makes up something in the order of 90 to 95 per cent of the population. They're the ones that are paying the bills. So it is a matter of personal philosophy really as to whether or not you think that it's worthwhile, but I suppose the tip I'm trying to give is that if you do think it's worthwhile getting involved with the media, here's some things to keep in mind, and if you have got a good story see me afterwards.

MARTIN DENNY: (indistinct) based on profit making.

PAUL WILLIS: The ABC is not based on profit making - I wish we were.

MARTIN DENNY: (indistinct) 80 or 90 per cent and the ABC is a very small part of it.

GORDON GRIGG: I think one of the things that your argument ignores completely, Martin, is the situation in which the world is and in which humankind is as a result of the overuse and unintelligent use of resources. Most scientists, many biologists in particular, are using their science - are keen to use the information they have gained or have at their fingertips through their science - to try and do something about reversing the damage that's being done to the planet. I think that for us to sit and say nothing, not to make an effort to publicise our science and tell the rest of the world about what our future is likely to be, I think that would be a great missed opportunity. In fact, I think it's an obligation that we all have to present this.

In other words, it's not really at all about personality or anything like that. If you think about the role that science plays in conservation biology, one of the things that I think probably distinguishes so much of biology and conservation biology from all other sciences is that there's an element of mission in it. It's not just about finding unimpassioned facts. There's an element of mission in it and that's why we have an obligation, I think, to try and put the information across. Can I just use an example.

At the conservation biology conference in Brisbane, about 4 years ago now, John Pickard started his excellent talk by asking everybody in the audience who had published a paper or had published anything in the last 5 years to put up their hands. Almost all the hands went up. He said, "Now, keep your hand up if the paper was published in Women's Weekly, New Idea," and he went on to list about half a dozen publications. All of the hands came down and he said, "You have all been wasting your time," and he had a very good point in terms of promoting science or understanding of things, information that's relevant to human survival. People had been, to use your words, Paul, preaching to the converted.

IAN PLIMER: Can I just make a very brief comment. My contract at the University of Melbourne goes back to the very first chair, the professor of mineralogy and natural philosophy. In that contract the chair must communicate natural philosophy to the burghers of the city of Melbourne. My contract has that clause still in it.

LYNDAL DAWSON: Gordon, I agree that we have an obligation to communicate our science. I don't think all scientists necessarily have the expertise or the charisma or the communication ability. I think we should also be looking at the reporters' obligation to interpret and report science that isn't necessarily of popular appeal. Not all science has popular appeal even though it's often funded - almost always funded by the public. I just wanted to make the point that I think the obligation is on high quality reporting. The Women's Day, the Women's Weekly do not always have high quality reporting. If we're just trying to sell ourselves some of us will be able to do it, some of us won't be so good at it. I think the reporting side of it is much more important.

DAN LUNNEY to **RON STRAHAN:** Ron, how much has changed in the time since you started appearing on radio?

RON STRAHAN: I would say that the greatest change has been an increase in the number and the quality of full-time science reporters. What was possible throughout the 19th century was to have naturalists and professional zoologists write long papers, long articles for newspapers without any concern as to their newsworthiness. It was quite enough to say, "Right, you're professor of zoology. You're the head of the Australian Museum," or "you're a great naturalist. You write a column for us once a week on anything you like and this is part of the educative value of science. We believe as a newspaper that we probably have a responsibility to spread science as widely as possible."

The last time that I think that happened to any great extent was in the late sixties when the *Sydney Morning Herald* gave me a half-page every fourth Saturday on which I could write anything I liked. It was called View from the Zoo but it didn't have to be - anything to do with an animal, however broadly, was grist to my mill. Regrettably, I think that has changed. I don't think it has necessarily changed because of a feeling on the part of editorial management that this is not possible any more. You can be an Allen Greer and get one in every 6 months.

I think it is because we have to some extent felt that we can't keep up with the quality of writing that modern science journalists are giving us in Australia. I think we, being professionals, are bowing to professionals who perhaps are doing a better job than us. That does not, I think, remove the possibility that some of our very great communicators - Mike Archer, Mike Tyler, Tim Flannery just to name three - could not, given an appropriate invitation, do something similar.

It can be a chore if you know that you have to write something regularly. To write something once a week can be extremely tiring. To write two a week like Gerard Henderson must be almost impossible if you're going to keep up any quality. But I do think that the possibility has not been ruled out that we could have self-reporting, self-commentary in newspapers if we got off our bums and offered it to management.